Egg Harbor Residence

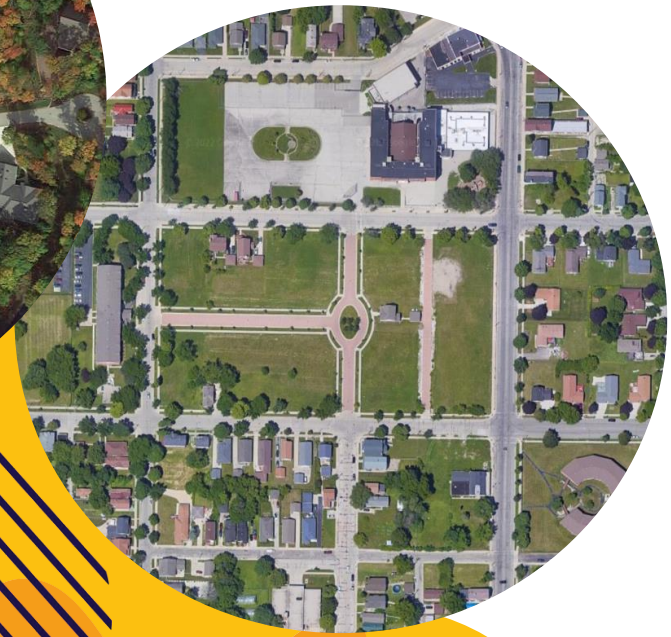
Sunburst Solar
University of Wisconsin-Madison
University of Wisconsin-Milwaukee

Team

Industry Partners

FIRST SUPPLY®

WonderWindow



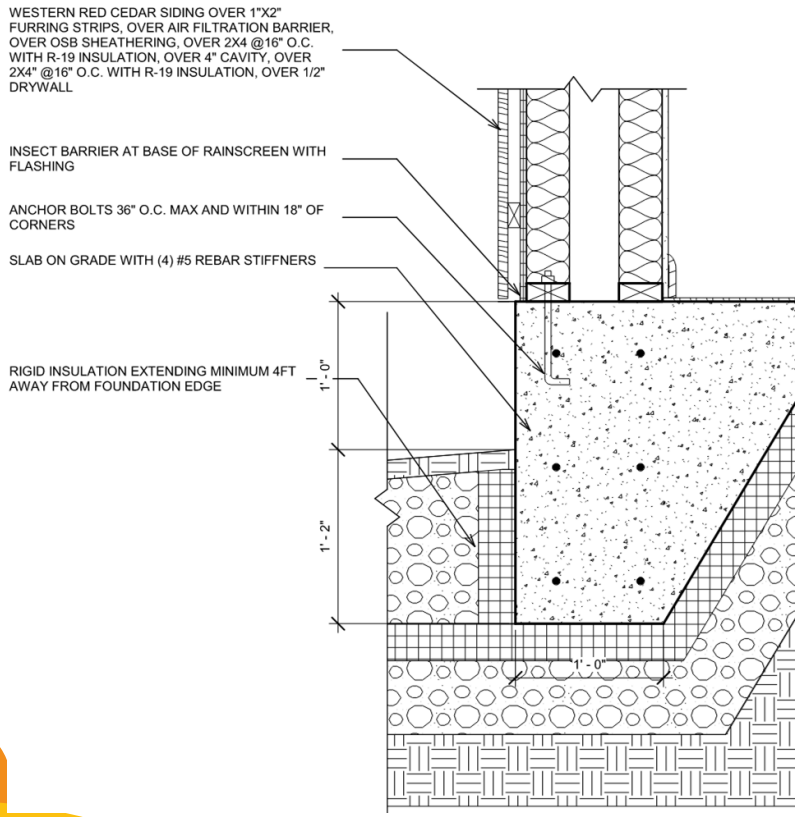
Client/Location

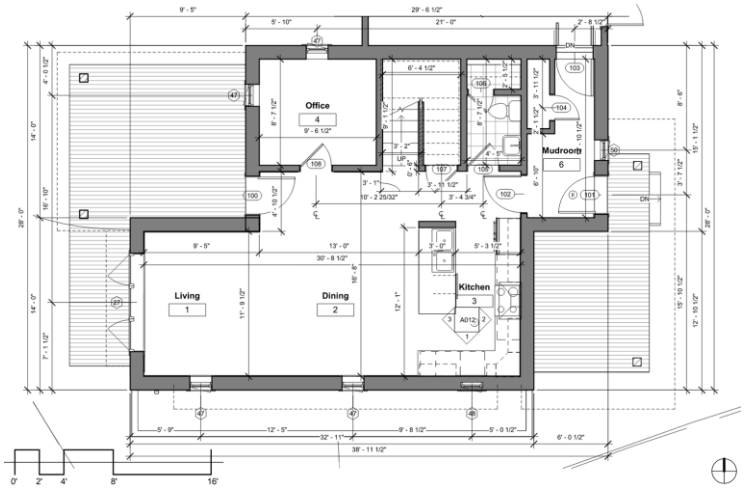
- Family home designed with mass production opportunities
- Egg Harbor, WI and Milwaukee, WI
- Climate Zone: 6A

NET–ZERO STRATEGIES

- 5 Passive Design Solutions
- Environmentally-friendly materials
- Natural resource collection
- Factory production

Construction

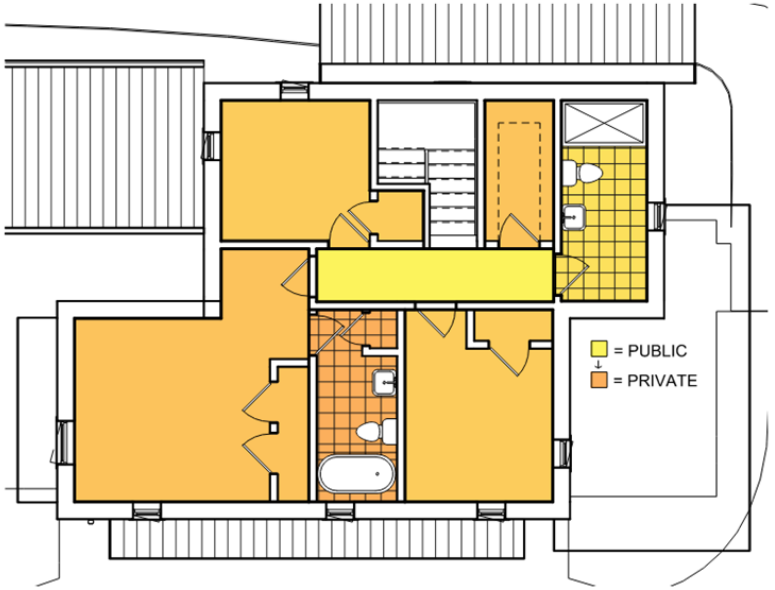




A double stud, cavity wall construction is used to increase distance between the interior and exterior.

Occupant Experience

LEVEL 1



LEVEL 2

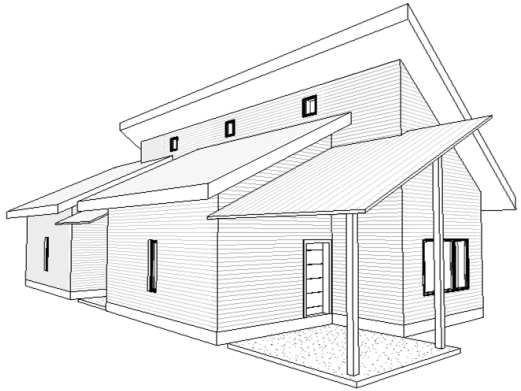
Occupant Experience

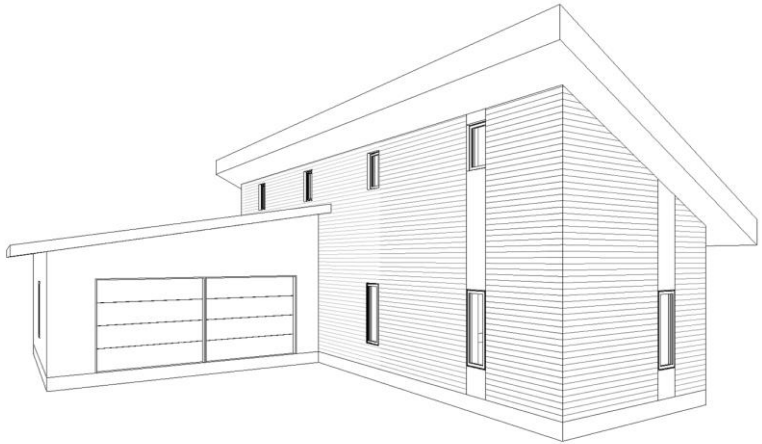
Smart System Integration

Lutron Smart Systems

Temperature and shading automation

MODULARITY





Multitude of Customer Choices

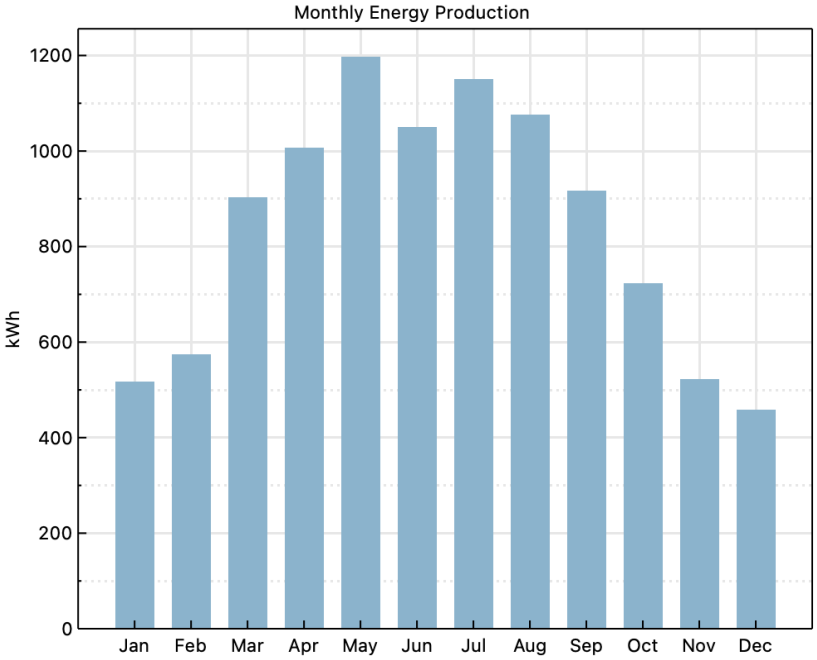
Catalog of designs by UWM team

These designs created by our UWM Architecture team begin to generate a catalog of prototypes viable for factory production.

Josey Heights - Milwaukee, WI

The City of Milwaukee has allotted funds of nearly $1 million to research and prototype a catalog of net zero designs that can be factory produced. The plan includes building the factory in the community, providing much needed jobs and affordable housing in Milwaukee.

Photovoltaic Solar System



21

Panels

9/12

Roof Pitch

10,088 kWh

Array Size

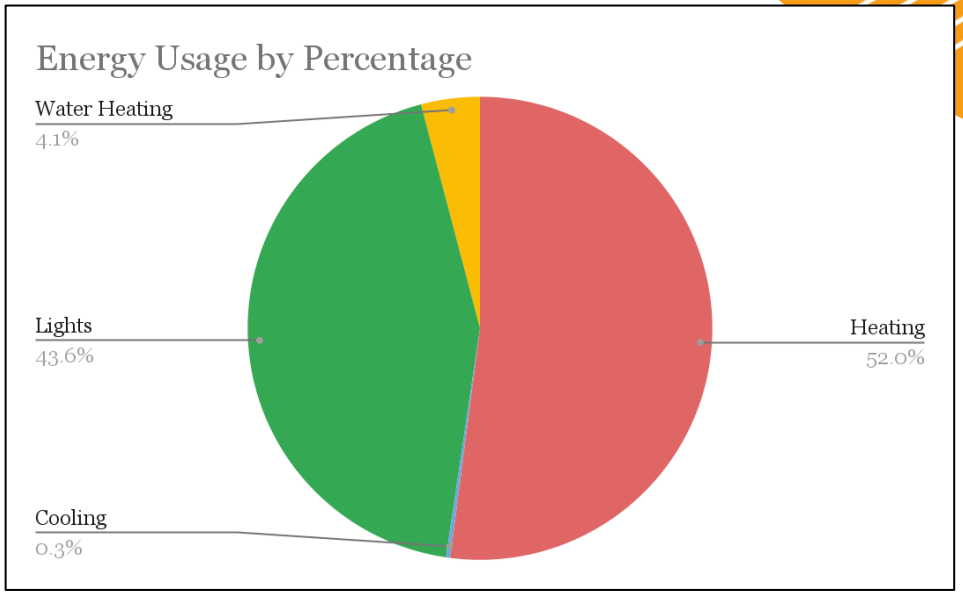
14.3 Years

Payback Period

Energy Analysis

27

HERS Score: W/o Solar



-11

HERS Score: W/ Solar

34.1

MMBtu/yr consumed

34.2

MMBtu/yr produced by solar

Energy Analysis

Goal: Create airtight envelope and lower infiltration

Windows

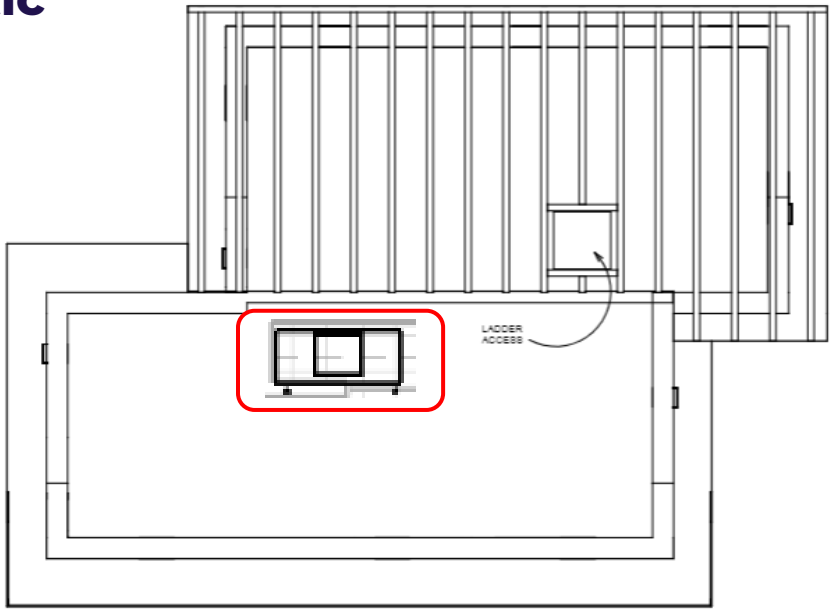
- U: 0.2
- SHGC: 0.45 (South Facing)
- SHGC: 0.25 (Non-South)
- Low e coating

Walls

- R-29
- Double stud
- Cellulose insulation

MECHANICAL SYSTEMS

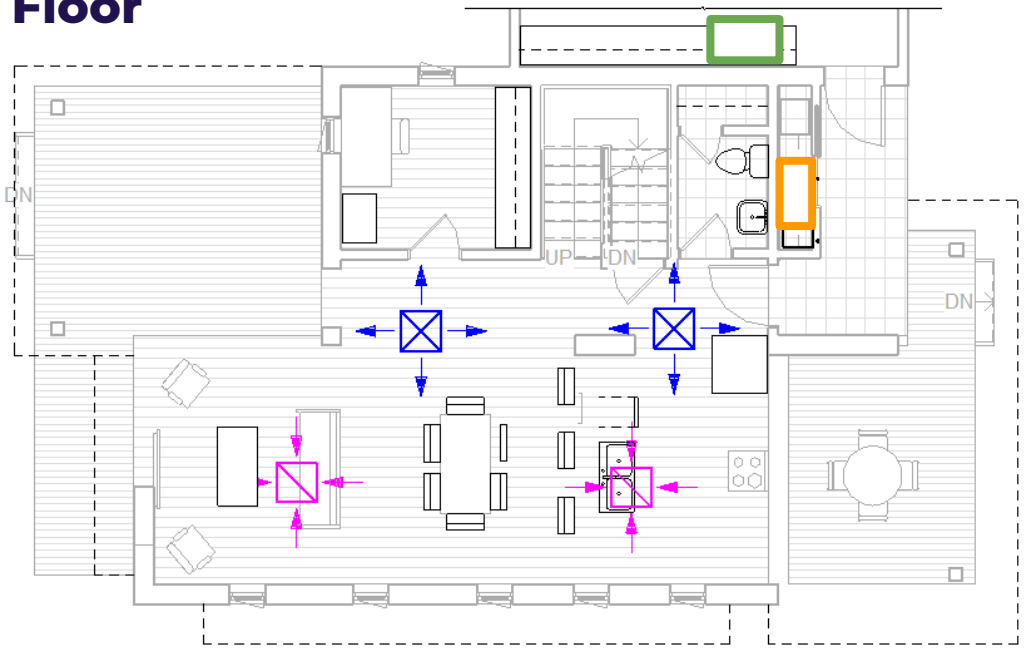
Attic



1 HVAC

MECHANICAL SYSTEMS

Main Floor



Legend	
Supply	Condenser
Return	ERV

1 **HVAC**

MECHANICAL SYSTEMS

Rheem
Water Heater

PEX Piping

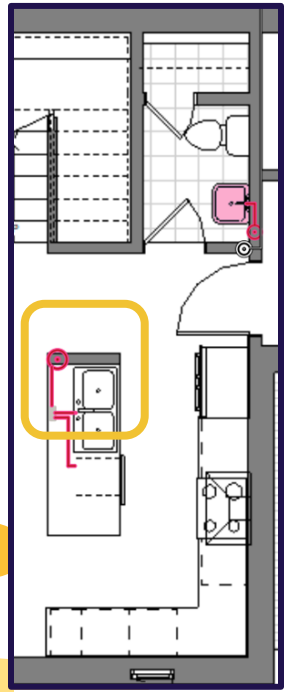
Multiport tee

14-port Manifold

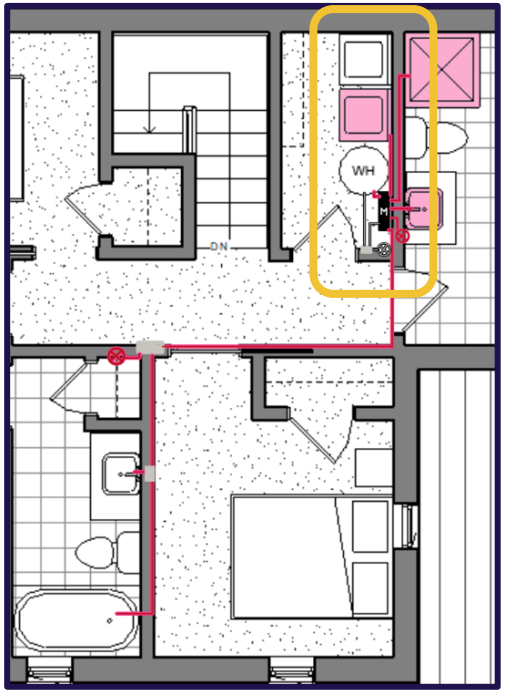
2 Plumbing

MECHANICAL SYSTEMS

Hot Water



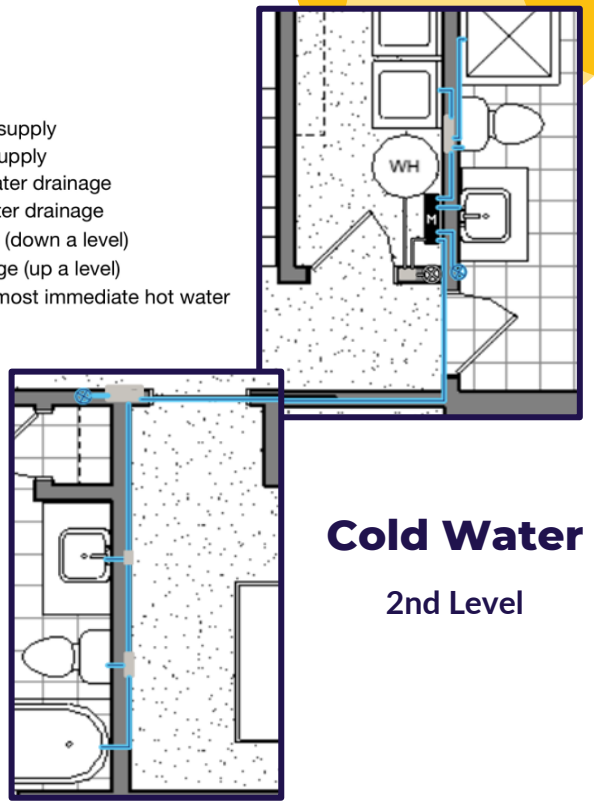
Main Level



2nd Level

KEY

- Supply line
- PEX pipe, cold water supply
- PEX pipe, hot water supply
- Copper pipe, Blackwater drainage
- Copper pipe, Greywater drainage
- Piping goes into page (down a level)
- Piping goes out of page (up a level)
- Appliance receives almost immediate hot water
- Multi-port tee
- Manifold
- Water heater
- Three way valve

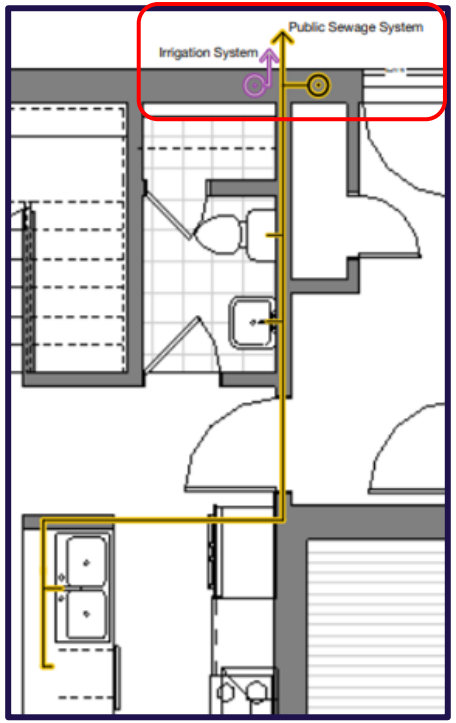


Cold Water

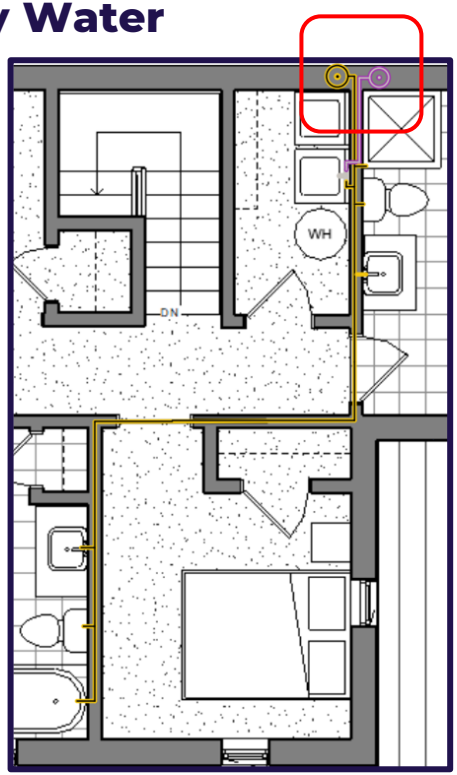
2nd Level

MECHANICAL SYSTEMS

Black/Grey Water



Main Level



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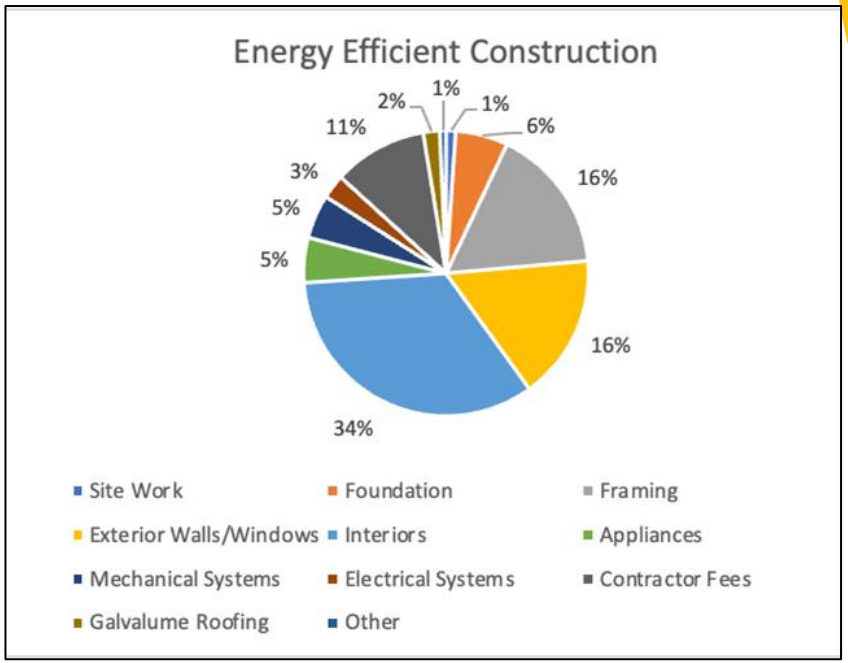
Estimated Home Cost

$296,028

	Cost per/sf	Total Cost
Egg Harbor Residence	**$158.75**	**$296,028**
Door County Median	**$217**	**$324,500**



Factory Production

5-15% Savings

Once production reaches full capacity and consistent volume, home prices will lower

2-3 Years

Needed in order to break even on production costs vs. startup costs

Quality Control

Fabricating modular homes in a factory allows for better control over the building process versus traditional on-site construction

EMBODIED ENVIRONMENTAL IMPACT

Factory Built
Reduce material waste and transportation

1

Local Sourcing
Local suppliers for lumber and concrete

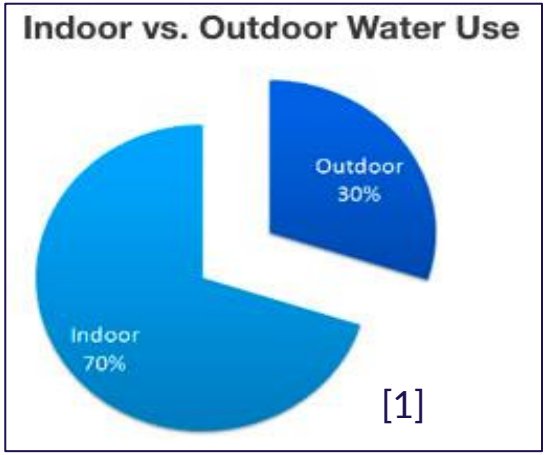
2

Greywater Usage
Laundry to Landscape

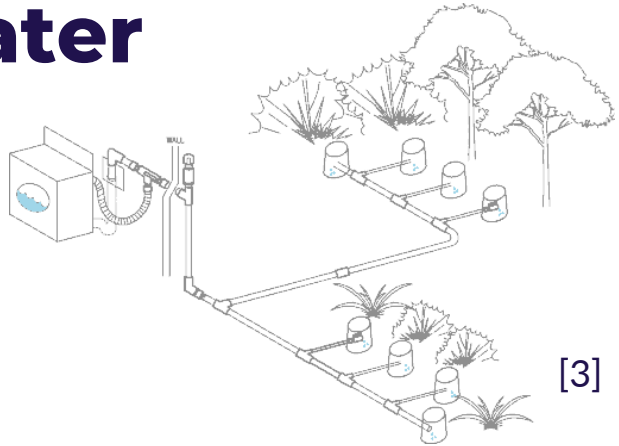
3

Grey Water & RainWater

- Laundry-to-landscape and rainwater collection systems



- Potential to save 74,000 gal/year [2]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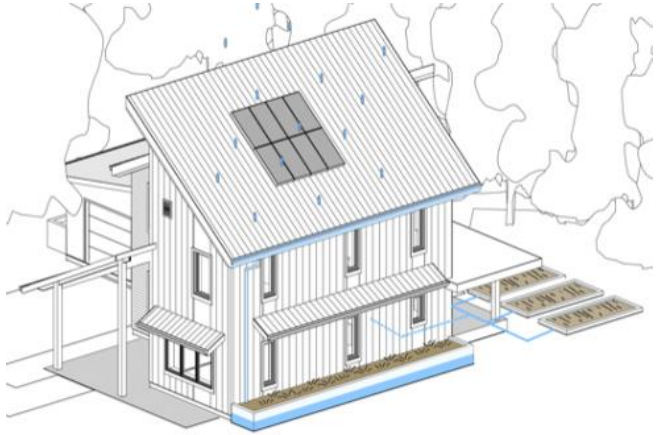
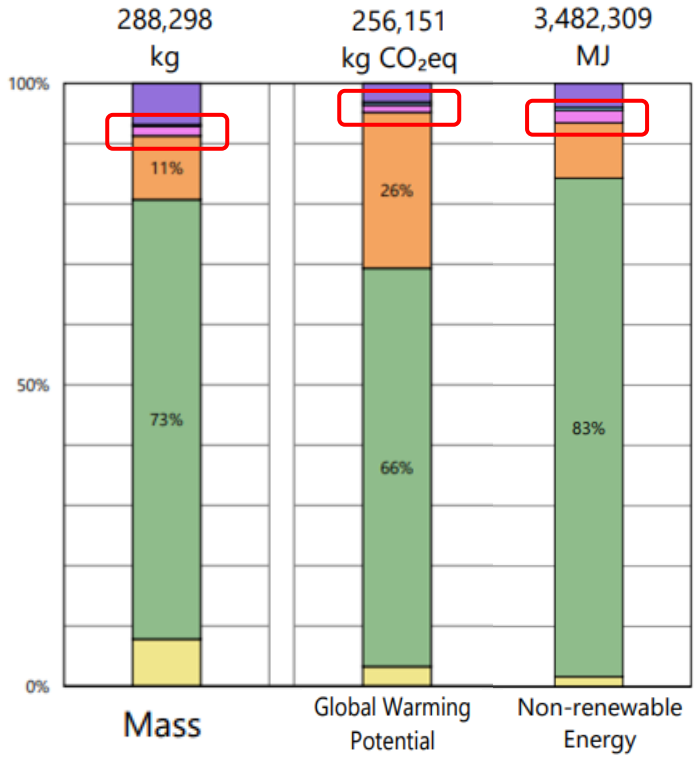
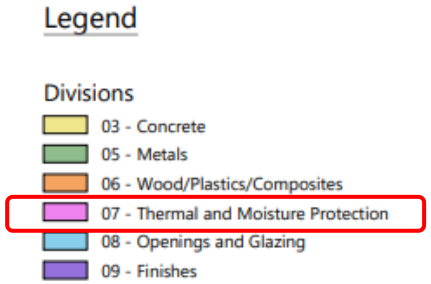


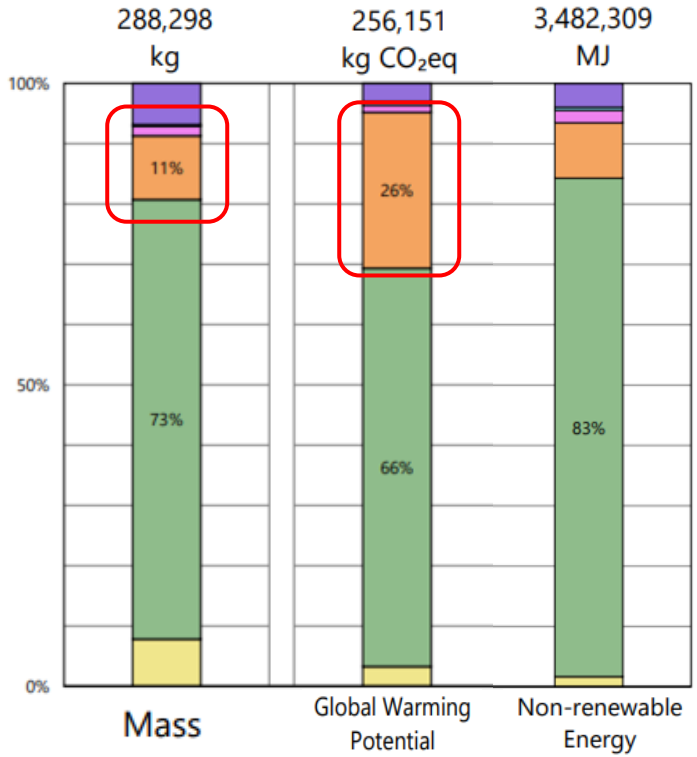
EMBODIED ENVIRONMENTAL IMPACT

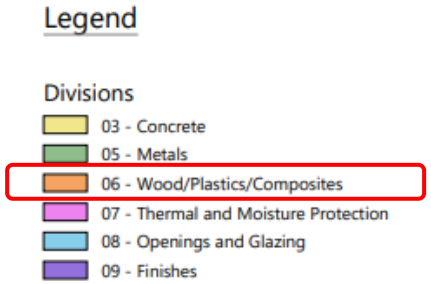




- **256,151** kgCO2e over lifetime (60 yrs.)
- **4.686** kgCO2e/year vs. average US home: **6,800** per year
- **159** vs **180** kgCO2e/SF
- Proportional, with improvement for thermal/moisture protection

EMBODIED ENVIRONMENTAL IMPACT





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It Doesn't End Here

Our clients are elated with our progress on their home and want to keep working with our team in order to help make their dream a reality.

The City of Milwaukee has laid out an Urban Equity strategy in which we will work together with officials and private contractors to do our part in helping Milwaukee's housing crisis.

THANK YOU!!!

References

[1] “Lawn and Garden Conservation,” Madison Water Utility. https://www.cityofmadison.com/water/sustainability/lawn-garden-conservation
[2] “Home Water Use in the United States,” NEEF. https://www.neefusa.org/weather-and-climate/weather/home-water-useunited-states (accessed Apr. 04, 2022).
[3] “Laundry to Landscape,” Greywater Action. https://greywateraction.org/laundry-landscape/ (accessed Apr. 04, 2022)